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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/921,714
Filing Date: August 06, 2001
Appellant(s): YOSHIDA, YASUHARU

Kevin C. Kunzendorf
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 30 January 2007 appealing from the Office action mailed 9 June 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,275,552	ANDO	8-2001
5,806,002	WIATROWSKI ET. AL.	9-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando, U.S. Patent No. 6,275,552, in view of Wiatrowski *et. al.*, U.S. Patent No. 5,806,002.

Regarding Claims 1 and 8, Ando discloses a method and system for data communications between roadside equipment and a vehicle's on board equipment using the dedicated short-range communication protocol for the purpose of collecting tolls (Abstract, Column 6 Lines 58-67, Figs. 1 and 6). A link is established between roadside equipment and the vehicle's on board equipment at one of a set of frequencies that may be selected from, switching between said frequencies being possible (Column 5 Lines 37-42, Figs. 2-3).

Ando does not expressly disclose searching means by which the vehicle's on board equipment searches frequencies used by the roadside equipment, wherein said searching comprises a cyclical switching of radio frequencies whereby radio frequencies for one type of

communication are searched for a larger fraction of said cycle than the fraction associated with frequencies for another type of communication.

Wiatrowski *et. al.* discloses a method of priority frequency scanning by a communication unit, said communication unit capable of being associated with an automobile (Abstract, Column 2 Lines 28-35, Fig. 1). A scanning algorithm is used whereby a receiver spends time scanning frequencies for one type of communication (priority) and frequencies for another type of communication (non-priority) (Column 2 Lines 36-44). The scanning algorithm comprises cyclically switching between frequencies for two types of communication, whereby the receiver is tuned to frequencies for one type of communication for a fraction of a cycle that is greater than the fraction of a cycle that the receiver is tuned to frequencies for the other type of communication (Fig. 2).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Ando by providing for the cyclical switching amongst frequencies transmitted by the roadside equipment, said cyclical switching involving the vehicle's receiver being tuned to frequencies associated with one type of communication for a fraction of a cycle that is greater than the fraction of a cycle that the receiver is tuned to frequencies for the another type of communication.

One of ordinary skill in the art would have been motivated to make this modification because of the enhancement in efficiency in causing the vehicle's receiver to spend a greater amount of time searching for frequencies associated with a type of communication that is high priority, or difficult to receive, than the period of time spent searching for a frequency associated with a type of communication that is low priority, or easy to receive.

Regarding Claims 2 and 9, Wiatrowski *et. al.* discloses that the communication unit of the invention may participate in both high-speed and low-speed links (Column 9 Lines 31-44).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to further modify the invention of Ando by assigning frequencies dedicated to a high-speed link to the fraction of a cycle that is greater, and assigning the other frequencies, dedicated to a low-speed link, the lesser fraction of the cycle (given the need for the vehicle's communication equipment to engage in a high-speed link and a low-speed link).

One of ordinary skill in the art would have been motivated to make this modification because the scanning for and establishment of a high-speed link is more difficult than the scanning for and establishment of a low-speed link by the communication equipment in a moving vehicle.

Regarding Claims 3 and 10, Wiatrowski *et. al.* discloses that the communication unit of the invention may participate in both high-speed and low-speed links (Column 9 Lines 31-44), and the practice of searching some frequencies more often than other frequencies (Fig. 2B).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to further modify the invention of Ando by providing the means for more frequent searching of frequencies associated with a high-speed link than frequencies associated with a low-speed link.

One of ordinary skill in the art would have been motivated to make this modification because by searching for frequencies associated with the high-speed link more often, there is a higher probability that said high-speed link will be initiated and the necessary information exchanged in the time before said link is eventually broken.

Regarding Claims 4 and 11, Wiatrowski *et. al.* discloses the use of various modulation types and the detection thereof by the communication unit (Column 2 Lines 28-33, Column 6 Lines 62-67, Column 7 Lines 34-41, Column 9 Lines 1-26, Fig. 4), and as a consequence, the use of various demodulation methods by the communication unit's receiver when said receiver switches between radio frequencies associated with different modulation types.

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to further modify the invention of Ando by providing means to switch the demodulation method employed by the receiver of the vehicle's communication equipment when said receiver switches frequencies.

One of ordinary skill in the art would have been motivated to make this modification because different frequencies may be associated with different modulation methods.

Regarding Claims 5 and 12, Wiatrowski *et. al.* discloses the division into talk groups of the frequencies used by the communication unit (Column 2 Lines 28-33 and 60-63, Column 9 Lines 1-26).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to further modify the invention of Ando by dividing, *a priori*, the frequencies into various groups and to conduct searches by cyclically frequencies in a given group.

One of ordinary skill in the art would have been motivated to make this modification because there may be instances in which either the user or the vehicle's equipment is aware of

their presence in a given short range communication zone that only uses frequencies pertaining to a certain group, and the search for the proper frequency may be thus expedited by only scanning frequencies belonging to this group.

Regarding Claims 6 and 13, Wiatrowski *et. al.* discloses the possibility that one talk group is identical to a second talk group (Column 2 Lines 63-67).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to further modify the invention of Ando by providing for talk groups that overlap.

One of ordinary skill in the art would have been motivated to make this modification because of the potential for conserving the use of frequency spectrum via the reuse of frequencies in two or more groups (and groups associated with separate pieces of roadside separated from one another geographically), which is made possible by the short range nature of the system of the invention.

Regarding Claim 7, Ando discloses the presence of vehicle dedicated short range communication equipment and roadside dedicated short range equipment (Column 6 Lines 58-67, Figs. 1 and 6).

(10) Response to Argument

Appellant asserts, on Pages 16-17 of the Appeal Brief, that one having ordinary skill in the art would not have been motivated to combine Ando and Wiatrowski *et. al.* for four reasons.

The first alleged reason of the Appellant with regard to the motivation to combine Ando and Wiatrowski *et. al.* is that "modifying the Ando system to include the frequency switching capabilities of Wiatrowski introduces needless complexity into the OBE-tollgate system". Examiner maintains that this ignores the possibility of scenarios wherein there exist a plurality

of classes or drivers using the tollgate system, each class of drivers having different needs (different lanes for different speeds, for instance) and different obligations (different tolls for different vehicle classes, for instance). Therefore, the frequency switching capabilities of Wiatrowski *et. al.* do not introduce needless complexity into the system of Ando.

The second alleged reason of the Appellant with regard to the motivation to combine Ando and Wiatrowski *et. al.* is "because of this complexity, the complexity, size, and cost of the OBE device of Ando is increased, in direct contravention to a stated goal of Ando (see, e.g., col. 2 lines 56-57)". Examiner maintains that Appellant fails to cite the stated goal of this passage of Ando, which involves simplifying the comparator circuitry (Fig. 3) for processing synchronization signals of different data lengths (Fig. 4), not simplifying the RSE as a whole. Modifying the RSE of Ando so that a plurality of frequencies are used for transmissions from the plurality of OBEs to the RSE (e.g., allowing for a plurality of uplink frequencies) would involve modifying the oscillators of said RSE (Fig. 2) to be variable so that the intermediate frequency out of the mixer is constant, and therefore need not involve any modifications to the registers, comparators, or CPU of Fig. 3 (since after downconversion and A/D conversion the digital circuitry is indifferent to the original carrier frequency).

The third alleged reason of the Appellant with regard to the motivation to combine Ando and Wiatrowski *et. al.* is "the system of Ando uses a fixed frequency to both transmit and receive data, and Ando provides no suggestion that multiple frequencies would even be desirable or useful. Specifically, Ando uses a time division multiple access communication method to pack information into one channel, as discussed at col. 7, lines 34-36 of Ando". Examiner maintains that this assertion is incorrect because Ando does disclose the use of

multiple downlink frequencies, by Appellant's own admission on Page 17 ("the road side equipment (RSE) sends an FCMS/MDS frame over a number of different frequencies").

The fourth alleged reason of the Appellant with regard to the motivation to combine Ando and Wiatrowski *et. al.* is "switching frequencies, as described by Wiatrowski, would take additional time, both to switch frequency (i.e., for the local oscillator to re-lock) and to negotiate on which frequency to communicate". Examiner maintains that with this alleged reason Appellant ignores the principle that engineering solutions often involve trade-offs, wherein one factor is worsened while another factor is improved to the point whereby a net gain, relative to the old solution, is achieved. Specifically, the use of multiple uplink frequencies would allow an OBE to be easily switched between vehicles, especially vehicles of different classes.

Appellant asserts, on Pages 17-18 of Remarks, that Ando teaches away from combination with Wiatrowski *et. al.* However a reference teaches away "when a person of ordinary skill, upon [examining] the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the Appellant." (In re Gurley, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 Fed. Cir. 1994). In other words, a reference teaches away when it specifically states that a certain combination is undesirable. Ando does not state that frequency scanning is undesirable in the context of communications between a RSE and a plurality of OBEs. Therefore, Ando does not teach away from combination with Wiatrowski *et. al.*

Appellant asserts, on Pages 18-19 and 34-36, that the combination of Ando and Wiatrowski *et. al.* does not teach every feature of Claims 1 and 8. Specifically, Appellant states "At Fig. 2A, Wiatrowski shows a diagram showing priority scanning. At discussed at col. 4,

lines 10-25, in the "no activity" time interval, communication unit 105 "switches between" channels 1, 2, 3, and 4, "in turn" until activity is detected. Wiatrowski then goes on to give representative "scan sequences" which "may be configured to suit the particular needs of a user." However, nothing in this description suggests any ratio of scanning time, or more specifically that a ratio for a first type of communication is larger than that of a second type of communication. When a reference does not disclose that drawings are to scale and is silent as to dimensions, arguments based on measurements of the drawings of little value." However, Wiatrowski *et. al.* does disclose, in the context of Figure 2A, that scan times are equal to 50 milliseconds; therefore, the duty cycles for priority scanning and non-priority scanning may be deduced from Fig. 2A (priority scanning has a duty cycle of $50/200 = .25$ and non-priority scanning has a duty cycle of $150/200 = .75$) (Column 4 Lines 26-35, Column 6 Lines 6-32).

Appellant reiterates, on Pages 19-23, 25-29, 30-34, 36-40, and 41-46, arguments that are identical to those that have already been addressed above.

Appellant asserts, on Pages 24-25 and 40-41, that Wiatrowski *et. al.* does not disclose a first type of communication that requires a high-speed link establishment and a second type of communication that does not require a high-speed link establishment. Figure 2 discloses a plurality of channels, some of said channels being priority channels (one type of communication) and some of said channels being non-priority channels (another type of communication). Clearly, the table occupying a portion of Column 9 gives an example (one of many possibilities according to Column 9 Lines 28-30) wherein different channels use different squelch rules. Contrary to Appellant's assertion that the plurality of channels are one frequency, Wiatrowski *et. al.* discloses that different channels may occupy different frequencies

(Column 3 Lines 21-23 and 53-60).

Appellant asserts, on Pages 29-30 and 46-47, that Wiatrowski *et. al.* does not disclose switching demodulation types. Specifically, Appellant states that "The table in col. 9 of Wiatrowski does show different modulation types. However, Appellant notes that each channel is on the same transmit and receive frequency "A" and "B" respectively. Thus, the table does not show changing frequencies." However, this table was not relied on to show the changing of frequencies, rather, Figure 2 was relied on for this purpose. Additionally, Wiatrowski clearly states that the channel configurations of this table is not an exhaustive list of all possible channel configurations (Column 9 Lines 28-30). Contrary to Appellant's assertion that "channel" and "frequency" are not synonymous in the context of Wiatrowski *et. al.*, Wiatrowski *et. al.* discloses that different channels occupy different frequencies (Column 3 Lines 21-23 and 53-60).

(11) Conclusion

For the above reasons, it is believed that the rejections should be sustained.
Respectfully submitted,

Matthew Genack



Examiner

Art Unit 2617

7 June 2007



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